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# *AEDES ALBOPICTUS* IN MEXICO

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ABSTRACT. Data relating to the discovery and identification of the Asian tiger mosquito, *Aedes albopictus*, in Coahuila State, Mexico, are presented. Infestations are reported for Piedras Negras and Ciudad Acuña. Samples from a third community were negative for *Ae. albopictus*.

Subsequent to the detection of *Aedes albopictus* (Skuse) in Texas, USA, in 1985, and its rapid spread to other North American areas (Moore et al. 1988), the Mexican Ministry of Health began an entomological survey program in 1987 to find if the species already existed in Mexican territory. The program consisted of the collection of mosquito larvae from artificial containers, primarily tires, and the use of ovitraps in urban environments. During this survey, about 50,000 specimens of mosquitoes per year were studied at the Instituto Nacional de Diagnóstico y Referencia Epidemiológicos (INDRE) from 51 urban areas of 13 states. Special attention was given to the state of Tamaulipas. No specimens of *Ae. albopictus* were found. We studied 1,421 specimens from the state of Coahuila, some of them from Ciudad Acuña and Piedras Negras. From Ciudad Acuña only *Aedes aegypti* (Linn.) and *Culex quinquefasciatus* Say were collected, whereas from Piedras Negras, *Ae. aegypti, Cx. quinquefasciatus, Psorophora ciliata* (Fabr.), *Psorophora confinnis* (Lynch Arribalzaga), and *Psorophora signipennis* (Coq.) were found (Ibáñez-Bernal et al. 1989). Unfortunately, the surveillance program was abandoned in 1988.

Larvae of *Ae. albopictus* were found in one tire in Matamoros, Tamaulipas, in 1988 (Centers for Disease Control 1989), but since that record the species has not been reported from Mexico. Francy et al. (1990) stated, "it is likely a matter of time before it is found again and spreads within Mexico.". The hypothesis to explain the reduced ability to disperse below 28°N was based upon the photoperiod adaptation of the *Ae. albopictus* strain introduced to the USA (Hawley et al. 1987), but now it is evident that this species will probably continue its expansion southward, as in Florida (O'Meara et al. 1993).

In the beginning of September 1993, the Coordinated Health Services of Coahuila State sent to INDRE 23 samples of mosquito larvae from the border cities of Ciudad Acuña and Piedras Negras, each sample from different artificial con-

Table 1. Numbers of mosquito, ceratopogonid, chironomid, and psychodid larvae (L) and pupae (P) from different samples from each locality.

| | Locality and collection date | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Ciudad Acuña, Sept. 1993 | | Piedras Negras, Sept. 1993 | | Francisco I. Madero, Oct. 1993 | | Total | |
| Taxon | L | P | L | P | L | P | L | P |
| *Aedes* sp.[1] | 2 | 4 | 25 | 2 | 27 | 8 | 54 | 14 |
| *Ae. aegypti* | — | — | 7 | — | 104 | 3 | 111 | 3 |
| *Ae. albopictus* | 1 | — | 41 | — | — | — | 42 | — |
| *An. pseudopunctipennis* | 5 | — | — | — | — | — | 5 | — |
| *Culex* sp.[1] | 2 | 3 | 16 | — | 19 | 14 | 37 | 17 |
| *Cx. quinquefasciatus* | 37 | 4 | 3 | — | 96 | — | 136 | 4 |
| *Cx. tarsalis* | 2 | — | — | — | 27 | — | 29 | — |
| *Ps. confinnis* | — | — | — | — | 3 | — | 3 | — |
| Ceratopogonidae | — | 2 | 3 | — | — | — | 3 | 2 |
| Chironomidae | — | — | — | — | 3 | 1 | 3 | 1 |
| Psychodidae | — | — | 4 | — | — | — | 4 | — |
| Total | 49 | 13 | 99 | 2 | 279 | 26 | 427 | 41 |

[1] The species of these genera could not be determined because larvae were 3rd instar or younger.

tainers in and around different houses. Unfortunately, the samples only had the address of the collection, without mention of the type of container. A 2nd group of samples was sent later from Francisco I. Madero. The identification of these samples is summarized in Table 1.

In Ciudad Acuña, only one specimen of *Ae. albopictus* was detected (Table 1), coexisting with *C. quinquefasciatus*. On the other hand, all the samples from Piedras Negras except one were positive for *Ae. albopictus*. *Aedes albopictus* was not found in Francisco I. Madero, but nearly all the samples were positive for *Ae. aegypti*. This locality (25°45'N, 103°16'W, elevation 1,150 m) is more southerly than Ciudad Acuña and Piedras Negras, but human movements could distribute *Ae. albopictus* to other localities of Coahuila and other northern Mexican states in a brief time. Ciudad Acuña is at 29°18'N, 100°57'W, with an elevation of 300 m, an annual average temperature of 21.9°C, and 436.6 mm of annual precipitation. Piedras Negras is at 28°42'N, 100°31'W, at 320 m elevation, with an annual average temperature of 21.6°C and 545.3 mm of precipitation (Garcia 1981).

An additional study of 11 samples of mosquito larvae collected in October 1991 and 5 samples obtained in May 1992 from Ciudad Acuña, and 16 samples collected in April 1992 from Piedras Negras did not find additional specimens of *Ae. albopictus*.

The presence of *Ae. albopictus* in Mexico is now confirmed for Coahuila, and it seems likely that the species already is established in other northern states such as Tamaulipas and Nuevo Leon.

All the specimens of *Ae. albopictus* are deposited in the Arthropod Collection of Instituto Nacional de Diagnóstico y Referencia Epidemiológicos (INDRE) (formerly Instituto de Salubridad y Enfermedades Tropicales, ISET), Mexico.

## REFERENCES CITED

CDC. 1989. Update: *Aedes albopictus* infestation—United States, Mexico. Morb. Mort. Week. Rpt. 38: 440, 445–446.

Francy, D. B., C. G. Moore and D. A. Eliason. 1990. Past, present and future of *Aedes albopictus* in the United States. J. Am. Mosq. Control Assoc. 6:127–132.

Garcia, E. 1981. Modificaciones al sistema de clasificacion climatica de Köppen. UNAM: Mexico.

Hawley, W. A. 1988. The biology of *Aedes albopictus*. J. Am. Mosq. Control Assoc. 4(Suppl. 1):1–40.

Hawley, W. A., P. Reiter, R. S. Copeland, C. B. Pumpuni and G. B. Craig, Jr. 1987. *Aedes albopictus* in North America: probable introduction in used tires from northern Asia. Science 236:1114–1115.

Ibáñez-Bernal, S., F. Martínez and E. Gallardo. 1989. Datos entomologicos relacionados con la posible presencia de *Aedes albopictus* en Mexico. Rev. Latinoam. Microbiol. 31:241–245.

Moore, C. G., D. B. Francy, D. A. Eliason and T. P. Monath. 1988. *Aedes albopictus* in the United States: rapid spread of a potential disease vector. J. Am. Mosq. Control Assoc. 4:356–361.

O'Meara, G. F., A. D. Gettman, L. F. Evans, Jr. and G. A. Curtis. 1993. The spread of *Aedes albopictus* in Florida. Am. Entomol. 39:163–172.